CLAIM AMENDMENTS

<u>IN THE CLAIMS</u>

This listing of the claims will replace all prior versions, and listing, of claims in the application or previous response to office action:

1-11. (Previously Cancelled)

12. (Previously Presented) A method for determining current oxygen loading of a 3-way catalytic converter of a lambda-controlled internal combustion engine, comprising:

determining a pre-converter lambda value of the engine exhaust gas upstream of the catalytic converter by a linear pre-converter lambda probe;

determining a lambda value of the engine exhaust gas downstream of the catalytic converter by a post-converter lambda probe;

determining an intake air mass flow rate by an intake air mass flow rate measuring device;

calculating a relative value for current oxygen loading of the catalytic converter from the pre-converter lambda value and the determine air mass flow rate through integration over time;

initializing the current oxygen loading relative value using the post-converter lambda probe value at time intervals in order to obtain an absolute value for current oxygen loading;

calculating a maximum oxygen storage capacity of the catalytic converter; and

calculating a current oxygen quotient from a quotient of current oxygen loading and the maximum oxygen storage capacity of the catalytic converter to aid in the regulation of engine emission output.

13. (Previously Presented) The method as claimed in claim 12, wherein the relative value for current oxygen loading is calculated using the formula:

$$mO2 = [O2]air\int_0^t \left(1 - \frac{1}{\lambda}\right) mL \quad dt,$$

where m02 is the current oxygen loading, λ is the pre-converter lambda probe's signal, mL is the air-mass flow rate, and $[02]_{air}$ is the mass component of oxygen in air.

14. (Previously Presented) The method as claimed in claim 13, wherein the relative value for current oxygen loading will be initialized if the post-converter lambda probe value indicates a rich or lean mixture.

15. (Previously Presented) The method as claimed in claim 14, wherein the maximum oxygen storage capacity of the catalytic converter is determined by integration over time between two rich mixture or lean mixture indications of the post-converter lambda probe value.

16. **(Currently Amended)** A method for regulating an exhaust treatment of a lambda-controlled internal combustion engine having a lambda controller and a 3-way catalytic converter, comprising:

[[a,]]a post-converter lambda probe connected downstream of the catalytic converter, comprising:

measuring the mass flow rate of intake air of the engine by a air-mass flow rate measuring device;

measuring a pre-converter lambda value of an exhaust gas of the engine by a linear pre-converter lambda probe connected upstream of the catalytic converter;

measuring a post-converter lambda value of an exhaust gas of the engine by a post-converter lambda probe connected downstream of the catalytic converter;

calculating a relative value for current oxygen loading of the catalytic converter from the pre-converter lambda value and from the measured air-mass flow rate by integrating over time;

initializing the current oxygen loading relative value via the post-converter lambda probe value at intervals in order to obtain an absolute value for current oxygen loading;

calculating a maximum oxygen storage capacity of the catalytic converter; and

calculating a current oxygen quotient from a quotient of current oxygen loading and the maximum oxygen storage capacity of the catalytic converter to assess the regulation of engine emission output as a function of the current oxygen loading level of the catalytic converter.

17. (Previously Presented) The method as claimed in claim 16, wherein the combustion engine is operated by the lambda controller such that the pre-converter lambda probe value oscillates about lambda = 1.

18. (Previously Presented) The method as claimed in claim 17, wherein for diagnostic purposes, oscillation of the pre-converter lambda probe value is set by the lambda controller to a pre-determined loading of the catalytic converter which changes periodically with the oscillation and is above standard operational loading.

19. (Previously Presented) The method as claimed in claim 18, wherein the catalytic converter is determine to be defective if the oscillation characteristics of the post-converter lambda probe value are outside a target range.

20. (Previously Presented) The method as claimed in claim 19, wherein the oxygen quotient is set to a predetermined target value necessary for diagnosing prior to the start of diagnosing.

21. (Previously Presented) The method as claimed in claim 20, wherein the calculated maximum oxygen storage capacity of the catalytic converter is compared with a predetermined threshold value.

22. (Previously Presented) The method as claimed in claim 22, wherein the catalytic converter is rinsed after an overrun fuel-cutoff phase where

a target curve for the oxygen quotient after an overrun fuel-cutoff phase is pre-determined and matched to the converter characteristics and the oxygen quotient is controlled to the target curve by the lambda controller after an overrun fuel-cutoff phase.

23. (Previously Presented) The method as claimed in claim 16, wherein the lambda controller controls the oxygen quotient to a target value of 50%.

24. (Previously Presented) The method as claimed in claim 16, wherein the lambda controller does not lean the mixture if the oxygen quotient is above a predetermined first threshold value, and does not richen the mixture if the oxygen quotient is below a predetermined second threshold value.

25. (Previously Presented) A system for regulating the emission output of an internal combustion engine, comprising:

a 3-way catalytic converter; a pre-converter linear lambda probe arranged in an exhaust stream of the internal combustion engine up-stream of the catalytic converter;

a post-converter lambda probe arranged in an exhaust stream of the internal combustion engine down-stream of the catalytic converter;

a intake air mass flow sensor arranged in an air intake pipe of the internal combustion engine; and

a lambda controller that regulates the operation of the internal combustion engine by:

measuring the mass flow rate of intake air of the engine by the air mass flow sensor,

measuring a pre-converter lambda value of an exhaust gas of the engine by the pre-converter lambda probe,

measuring a post-converter lambda value of the exhaust gas of the engine by the post-converter lambda probe,

calculating a relative value for current oxygen loading of the catalytic converter from the pre-converter lambda value and from the measured air mass flow rate by integrating over time,

initializing the current oxygen loading relative value via the post-converter lambda probe value at intervals in order to obtain an absolute value for current oxygen loading,

calculating a maximum oxygen storage capacity of the catalytic converter, and

calculating a current oxygen quotient from a quotient of current oxygen loading and the maximum oxygen storage capacity of the catalytic converter to assess the regulation of engine emission output as a function of the current oxygen loading level of the catalytic converter.